

**What is claimed is:**

1. An isolated or recombinant polypeptide or fragment thereof encoded by a nucleic acid molecule derived from a hepatitis C virus, having at least one of the following characteristics:
  - 5 1) at least a portion of the polypeptide is encoded by a reading frame +1 or +2 relative to the standard hepatitis C virus open reading frame;
  - 2) at least a portion of the polypeptide is encoded by a reading frame corresponding to the reading frame of SEQ ID NO:1 in which the first nucleotide of
  - 10 SEQ ID NO:1 is the first nucleotide of a codon;
  - 3) at least a portion of the polypeptide comprises an amino acid sequence at least 60% identical to the amino acid sequence shown in SEQ ID NO:2; and
  - 4) at least a portion of the polypeptide comprises an amino acid sequence encoded by a nucleic acid molecule which hybridizes under high stringency to the
  - 15 nucleotide sequence shown in SEQ ID NO:1.
2. The polypeptide or portion thereof of claim 1, wherein said polypeptide is at least about 8 amino acids to at least about 100 amino acids in length.
- 20 3. The polypeptide or portion thereof of claim 2, wherein said polypeptide is at least about 14 amino acids to at least about 30 amino acids in length.
4. The polypeptide or portion thereof of claim 1, wherein said polypeptide is encoded by a reading frame +1 or +2 to the standard hepatitis C reading frame.
- 25 5. The polypeptide or portion thereof of claim 1, wherein said polypeptide is encoded by a reading frame corresponding to the reading frame of SEQ ID NO:1 in which the first nucleotide of SEQ ID NO:1 is the first nucleotide of a codon.
- 30 6. The polypeptide or portion thereof of claim 5, wherein said polypeptide or portion thereof is encoded by the nucleic acid molecule of SEQ ID NO:1 and causes an immune response in a subject.

7. The polypeptide or portion thereof of claim 1, wherein said polypeptide comprises an amino acid sequence at least 60% identical to the amino acid sequence shown in SEQ ID NO:2 and causes an immune response in a subject.
- 5 8. The polypeptide or portion thereof of claim 1, wherein said polypeptide comprises an amino acid sequence at least 90% identical to the amino acid sequence shown in SEQ ID NO:2 and causes an immune response in a subject.
- 10 9. The polypeptide or portion thereof of claim 1, wherein said polypeptide comprises an amino acid sequence shown in SEQ ID NO: 2 which polypeptide causes an immune response in a subject.
- 15 10. The polypeptide or portion thereof of claim 1, wherein said polypeptide comprises an amino acid sequence encoded by a nucleic acid molecule which hybridizes under high stringency to the nucleotide sequence shown in SEQ ID NO:1.
- 20 11. The polypeptide or portion thereof of claim 1 which polypeptide comprises at least a portion of an amino acid sequence selected from the group consisting of SEQ ID NO: 3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, and SEQ ID NO:8 and causes an immune response in a subject.
- 25 12. An isolated or recombinant polypeptide comprising an amino acid sequence selected from the group consisting of: LNLKEKP(X1)(X2)TPT(X3) and AAHRT(X4)SSR(X5)(X6)VR, wherein X1 is N or K, X2 is V or E, X3 is A or V, X4 is L or S, X5 is A or V, and X6 is A or V.
13. A polypeptide consisting of an amino acid sequence selected from the group consisting of LNLKEKPNVTPTAC and AAHRTSSSRAVVRC.
- 30 14. A vaccine composition for preventing hepatitis C infection in a subject comprising the polypeptide of claim 1.

15. A vaccine composition for preventing hepatitis C infection in a subject comprising the polypeptide of claim 2.

16. A vaccine composition for preventing hepatitis C infection in a subject  
5 comprising the polypeptide of claim 4.

17. A vaccine composition for preventing hepatitis C infection in a subject comprising the polypeptide of claim 7.

10 18. A vaccine composition for preventing hepatitis C infection in a subject comprising the polypeptide of claim 12.

19. A vaccine composition for preventing hepatitis C infection in a subject comprising a nucleic acid encoding polypeptide of claim 1.

15 20. A vaccine composition for preventing hepatitis C infection in a subject comprising a nucleic acid encoding polypeptide of claim 2.

21. A vaccine composition for preventing hepatitis C infection in a subject  
20 comprising a nucleic acid encoding polypeptide of claim 4.

22. A vaccine composition for preventing hepatitis C infection in a subject comprising a nucleic acid encoding polypeptide of claim 7.

25 23. A vaccine composition for preventing hepatitis C infection in a subject comprising a nucleic acid encoding polypeptide of claim 12.

24. An antibody which binds to a polypeptide of claim 1.

30 25. A kit for detecting a hepatitis C infection comprising the polypeptide of claim 1.

26. A kit for detecting a hepatitis C infection comprising an antibody to the polypeptide of claim 1.

27. A method of preventing HCV infection comprising administering the polypeptide of claim 1 to a subject or by causing said polypeptide to be synthesized in a subject prior to HCV infection such that HCV infection is prevented.

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28. A method of diagnosing HCV infection comprising detecting the presence or absence of antibodies which react with the polypeptide of claim 1 in the body fluid of a subject, wherein the presence of antibodies which bind the polypeptide is indicative of an infection with HCV.

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29. A method of diagnosing HCV infection comprising detecting the presence or absence of the polypeptide of claim 1 in the body fluid or tissue of a subject, wherein the presence of an HCV polypeptide is indicative of an infection with HCV.

30. A method for identifying a compound which interacts with the polypeptide of claim 1, comprising:

contacting said polypeptide with a compound in a cell-free system under conditions which allow interaction of the compound with the polypeptide such that a  
5 complex is formed;

separating the compounds which do not form complexes with an HCV polypeptide from those which do form complexes with an HCV polypeptide; and

isolating and identifying the compounds which form complexes with an HCV polypeptide.

TABLE 1. Novel HCV Polypeptides

		Majority	
		GenBank Accession Number	
A Q I L N L K E K P N V T P T V A H R T S S R V A V R S L V E F T C C R A G A L D W V C A R R			AF011751
A H F L N L K E K P K E T P S V A H R T S S R V A D R S L V E Y T C C R A G A H D W V C A R R		D17763	
A Q I L N L K E K P K E T Q T A A H R T L S S R V A V R S L A E F T C C R A G A P G W V C A R Q		D10988	
A R I L N L K E K P N V T P T A A H R T L S S R V A A R S L A E F T C C R A G A P E W V C A R R		D14853	
A Q I L N L K E K P K E T P T V A H K T L S F R A A R S L A E Y T C C R A G A P G W V C A R Q		D00944	
A Q I Q N P K D K P K E T P T V A H R T S S R V S W V E Y T C C R A G A L D W V C A R L		D63822	
A R I L N L K E K P N V T P T A A Q W T L S S R V V A R S L A E F T C C R A G A P D W V C A R L		Y11604	
A Q I L N L K E K P N V T P T A A H R T S S R A V V R S L V E F T C C R A G A P G W V C A R L		D50482	
		Majority	
G R L P S G R S S L V E G A S L S S P R I A G P G L S P G T L G P S M A M R V A G G R D G S C L			AF011751
V K L L N G H S L A D D D S L S P R R V G A K A G P G L S P G T L G P S M V T R A A G Q G G G S C P		D17763	
G R L L S D P S R V D D A S P S R K I G A P P A S P G E S Q D I L G P C T E T R V A A G R V G S C P		D10988	
G R L P S G R N L A G G V S L F P R P A D P R E G P G R S P G T L G P S M A T R A V G G R D P S C P		D14853	
G R L R S G P S H V E G A S P S L R I G A P L A N P G E N Q D T P G P Y T G M R D S A G Q D R S C P		D00944	
G R L P N G P S P E A G V S P F Q R L A A R R A V P G V S L G T H G P C M G M R A A G G Q G G S C P		D63822	

G R L R S G R N L V E D A N L S P R R V D P R E G P G H N Q D I H G L F T V M R V V G G Q D G S C P  
G R L P S G R N L V E G D N L S P R F A G P G L S P G T L G P S M A M R V W G G Q D G S C H  
Y11604  
D50482

## Majority

P A A L G L L G A P M T P G G G P A I W V R S S I P L R A A S P T S W G T S R S S A P L - G A S P E

P V A L G L A G A P Q T P G V G R A I W V R S S I P L R A A S P T S W G T Y R S S A P L E A A P G	AF011751
H A A P V H P G A Q M T P G G G P A I W V K S S I P . R A D S P T S W G T S R G G A L L . E A S S Q E	D17763
P A G L V L L G A P P T P G I D H A I W A E S S I P L R V V L P T S W G T S L S L A P R L E A S S P E	D10988
P A A L G L V G A L L T P G G G H A I W V R S S I P S R V A S P T S W G T S T S S A L L . G A L P E	D14853
P E V P V P L G A P M T P G I G P A T W V R S S I P . R A A L P T S W G T S L S . A P R S A A S S P E	D00944
P A A L A Q R G A Q T T P G V G L A T W V R S S I P L A A S P T W G T S P S . A A P . G A S Q O Q	D63822
P V A L D R L G A Q M I P A G G P A I W V R S S I P . P A A S P T S W D T S R S . A P P W V A S P G	Y11604
P G A L G L V G A P R T P G V G R V I W V R S S I P L H A G S P T S W G T F P S . A A P . G A L P G	D50482

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## Majority

L W R M A S G S W R T G - I T Q Q G I F P V A L F L S S F W L F C P A - L S Q L R P S S K C A T L V G

P W R M A S G F W K T A . T M Q Q G T F L V A L S L S S F W P C S L A . L C P L Q P T K C A I P R G	AF011751
P S R M A . G P L K T G . I S Q Q G T C P V A P F L S S F L L C S L A . F I Q Q P V . S G G I R L A	D17763
L W H T V L G S W R T G . I T Q Q G I Y P V A L F L S F C I L L E C H A S Q C Q C L Q W K S G T L V L	D10988
L W H M V L E S S W K T A . I T Q Q G T S P V A L F L S S C S L E Y P A . Q S I L R P S E C A T L R G	D14853
L S R M A . E S W R T G L I L Q Q G T Y P V A P F L S S C W P C C P A S P P R S P L P K . R T S V P	D00944
L W R M A S G L L R T G . I M Q Q G I F P V A P F L S S F W H F F R A . L Y Q P R Q S I M P I R A A	D63822
P W H M V S G L W R T G S I M Q Q G I S P V A P F L S S S W H F F R A . L S P L R P L T I A M S Q A	Y11604
P W R M V S G F W R S A . T T Q Q G I F P V A L S L S S . P F Q L P I M K C A T C P G	D50482